

**SECRET**

10-1235/a

27 FEB 1958

Lt. General D. L. Putt  
Deputy Chief of Staff, Development  
United States Air Force  
Room 4E324, The Pentagon  
Washington 25, D.C.

Dear General Putt:

Thank you for your letter of 17 February 1958 in which you called my attention to the progress the U.S. Air Force had been making in the development of a language translation device. We have been following the development of the Photoscopic Memory Disc both at International Telemeter Corporation and at the Air Intelligence Laboratory at Rome Air Development Center.

Our interest in a machine translation capability has been continuous since feasibility of such translation was established. During the past two years we have supported research in this field at [REDACTED]

The present prognosis of our sponsored research is for an operational capability by mid-1958 in the field of physics and by late 1958 in chemistry. We have already discussed branching out into Czech and Serbo-Croatian as a result of a successful test of these languages by the techniques developed at [REDACTED]

[REDACTED] Polish, French, Chinese and Arabic are on the test agenda for the future.

In the light of our present commitments for research in mechanical translation, I do not feel that we can offer funding support to your program. We shall, of course, continue to watch the development of the Photoscopic Memory Disc as a high density, rapid-access device not only for mechanical translation application but also any application where large quantities of digital information must be stored with minimum access or search time.

Sincerely yours,

CONCUR:

Signed

Allen W. Dulles  
Director

USAF  
review(s)  
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26 February 1958

MEMORANDUM FOR: The Director of Central Intelligence  
VIA: Deputy Director (Intelligence)  
SUBJECT: Photoscopic Memory Disc  
REFERENCE: Letter from Lt. Gen. Putt to DCI, 17 February 1958

This memorandum recommends ACTION. Such recommendation is contained in paragraph below.

1. The referenced letter describes the financial history of the Air Force project at International Telemeter Corporation in Los Angeles. The Project Director was Dr. Gilbert W. King, one of the outstanding computer men in the world.

STAT 2. In October, 1957, I went to California at the request of Mr. [ ] to evaluate the progress on the Photoscopic Memory Disc and auxiliary read-out equipment. Examination of the device under operating conditions convinced me that King had, in fact, made a technological break-through in storage density increase. He had invented a device which could store 30 million electronic bits of information on a 10 1/2 inch glass disc. This means that approximately 500,000 words could be stored on the disc. I have a sample of the disc, if you care to see it.

3. Although the machine was called a mechanical translation device, it was not a mechanical translator but rather a mechanical dictionary. It could not resolve syntactical relationships but could only translate word for word. However, the instrument had utility for us in another context (the storage of the tremendous volume of special intelligence information in the Special Register).

4. The Air Force monitor stated that the funds allocated to the research had been expended and another \$100,000 was necessary for debugging and making the equipment operational. Because it was to our interest to see the machine completed, I was asked to describe the device and its utility to Messrs. May and Wilhelm of the Bureau of the Budget. They determined through channels not available to us that the Air Research and Development Command (ARDC) could continue to fund the project to completion. For this reason they would not approve our financing the balance of the research, a position with which there was no argument.

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5. The ARDC did, in fact, provide the funds, and the machine was transferred to the Air Intelligence Laboratory in December 1957 for further testing. Dr. King left International Telemeter Corporation and joined IBM Research in January 1958. Dr. King has discussed with me his ideas for attaching his photostatic memory machine to a standard computer to do finished translation. On the basis of advice from the National Bureau of Standards, I do not believe such a marriage of machine is necessary for mechanical translation purposes. Furthermore the long development period envisaged by the project is not commensurate with the prognoses of our principal researchers, [redacted] people.

STAT

6. In the light of the above recitation of the history of the project and our rebuff by Bureau of the Budget offices when we tried to participate last fall, I recommend that you sign the attached letter to General Putt.

[redacted]  
Acting Assistant Director  
Central Reference

STAT

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DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS UNITED STATES AIR FORCE  
WASHINGTON 25, D. C.

Mr. Allen W. Dulles  
Director  
Central Intelligence Agency  
Washington 25, D. C.

Dear Mr. Dulles:

For more than four years, the U. S. Air Force has conducted a program to develop a language translation device aimed at translating printed Russian into English. In connection with the USAF Intelligence Data Handling System (438L), representatives of many departments and agencies have attended progress briefings during this period. The Air Force realizes the mutual interest held by the various departments in machine translation, and this letter attempts to describe the status of this program, to indicate estimated date for attainment of an operational capability, and to point out means of achieving this capability at a much earlier date.

During the course of this program the Air Force has supported the effort to the extent of \$1,250,000. Programs for FY 1958 and FY 1959 schedule further support of \$1,400,000. At this rate, the first operational capability is estimated for January 1962.

In recent months a breakthrough has occurred which indicates a way of obtaining an earlier operational date provided additional funds can be applied and contracts initiated during March or April 1958. The breakthrough is the 100-fold increase in storage density of bits of memory without loss of access or search time through the development of the Photoscopic Memory Disc. This advancement and the further study and analysis of syntactical relationships of the two languages now make it possible to accelerate this development program. The amount of additional funds required for this acceleration is estimated at \$500,000 needed immediately, and approximately a similar amount in FY 1959. As a result, the improved operational date is estimated to be between January and June 1960. The estimate of additional funds does not include models of this equipment for participating agencies though this could be arranged.

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In view of the mutual interest in this program, the Air Force desires to explore the possibility of funding support from your Agency. Should more detailed information be needed during the course of your evaluation of this information, such will be furnished promptly.

Sincerely,

W. B. Galt

Do. 10. 1967  
Headquarters, USAF, 1967  
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